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ENSAFE/ ALLEN AND HOSHALL

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY NAVAL BASE CHARLESTON CHARLESTON, SOUTH CAROLINA CTO-029

FINAL COMPREHENSIVE PROJECT MANAGEMENT PLAN RCRA FACILITY INVESTIGATION

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA

SOUTHDIV CONTRACT NUMBER: N62467-89-D-0318

Prepared by:

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August 30, 1994

Release of this document requires the prior notification of the Commanding Officer of the Naval Base Charleston, Charleston, South Carolina.

VOLUME I

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VOLUME I

ACRONYM LIST

AOC	Area of Concern
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BEST	Building Economic Solutions Together
BRAC	Base Realignment and Closure
CAMP	Corrective Action Management Plan
CAMU	Corrective Action Management Units
CERFA	Community Environmental Response Facilitation Act
CMS	Corrective Measures Study
CNSY	Charleston Naval Shipyard
CS	Confirmation Study
CRP	Community Relations Plan
DMP	Data Management Plan
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
E/A&H	EnSafe/Allen & Hoshall
EBS	Environmental Baseline Survey
FISC	Fleet and Industrial Supply Center
HSWA	Hazardous and Solid Waste Amendments
IRP	Installation Restoration Program
NACIP	Navy Assessment and Control of Installation Pollutants
NAVBASE	Naval Base Charleston
NISE-EAST	Naval Command Control and Ocean Surveillance Center in Service Engineering - East
NRMC	Naval Regional Medical Center
PMP	Project Management Plan
POL	Petroleum, Oils, and Lubricants
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SCDHEC	South Carolina Department of Health and Environmental Control
SMWU	Solid Waste Management Unit
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TRC	Technical Review Committee
TU	Temporary Unit
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOA	Volatile Organic Analysis

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SIGNATORY REQUIREMENT

Condition I.E. of the HSWA portion of RCRA Part B Permit (EPA SCD 170 022 560) states that "All applications, reports, or information submitted to the Regional Administrator shall be signed and certified in accordance with 40 CFR §270.11." The certification reads as follows:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Commander, Charleston Naval Shipyard **Date**

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1.0 INTRODUCTION

Environmental investigation and remediation at Naval Base Charleston (NAVBASE) is predominated by the Resource Conservation and Recovery Act (RCRA)/Hazardous and Solid Waste Amendments (HSWA) and by the Base Realignment and Closure (BRAC) Act. Even though the permittee, Charleston Naval Shipyard, only owns discrete parcels of land within the contiguous property identified as Naval Base Charleston, the RCRA Facility Investigation (RFI) scope includes the entire NAVBASE. Therefore, the ensuing discussions in this Project Management Plan (PMP) and the remainder of the RFI Work Plan will refer to the facility as NAVBASE with the exception of Sections 1.2 and 1.4 of the PMP which explain land usage and the issuance of the RCRA permit.

This PMP for the RFI to be conducted at NAVBASE describes the planning documents required by Condition II.C.4 and Appendix B of the HSWA portion of the RCRA Part B Permit (EPA SCD 170 022 560) and discusses overall investigative strategy.

Compliance with the RCRA Permit is regulated by both South Carolina Department of Health and Environmental Control (SCDHEC) and the US Environmental Protection Agency (USEPA). SCDHEC regulates the pre-HSWA elements of the permit under delegated authority and USEPA regulates the HSWA elements of the permit.

1.1 Site History and Location

NAVBASE Charleston was established in 1901 with a primary mission to repair, overhaul, refuel, convert, and modernize ships, and to provide logistic services in support of fleet readiness. In 1933, NAVBASE was designated as a new construction yard. During World War II, shipyard activity included ship repair, conversion, and construction. After World War II, ship construction was discontinued, but ships continued to be converted, altered, and repaired. In 1948, NAVBASE was designated as a submarine repair and overhaul center. In 1961, it was given the responsibility to overhaul and modernize nuclear submarines.

NAVBASE is located on various contiguous and discontiguous properties in Charleston and Berkeley counties on South Carolina's central coast (Figure 1-1). The base is located on both the east and west banks of the Cooper River, approximately five miles north of downtown Charleston (Figure 1-2).

1.2 Land Use

The areas surrounding NAVBASE are "mature urban", having long been developed with commercial, industrial, and residential land uses. Commercial areas are located primarily west of NAVBASE; industrial areas lie primarily to the north of NAVBASE and along the west bank of Shipyard Creek.

The area west of Shipyard Creek is concentrated with heavy industry, and has been for many years. Railways have served the area since the early 1900s. This, when combined with nearby waterways, has made the area ideal for heavy industry. While ownership has changed from time to time, the land adjacent to NAVBASE remains dedicated to chemical, fertilizer, oil refining, metallurgy, and lumber operations.

In contrast, the east bank of the Cooper River is undeveloped and contains extensive wetlands, particularly along Clouter Creek and Thomas Island. Active dredge spoil disposal areas are located on Naval property between the Cooper River and Clouter Creek. Active dredge spoil disposal areas also are located on the southern portion of Daniel Island and on Drum Island.

NAVBASE covers approximately 2,985 acres. Navy commands maintaining real property on the base include:

1)	Charleston Naval Shipyard (CNSY)	
	a. Controlled Industrial Area	120.84 acres
	b. Spoil Area East of Cooper River	1,397.00 acres
2)	Commander Naval Base	1,467.80 acres
	TOTAL ACREAGE	**2,985.64 acres**

Figure 1-1 Location Map

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Figure 1-2 Vicinity Map

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Major commands that occupy areas of the base include Fleet Ballistic Missile Submarine Training Center, Fleet and Industrial Supply Center (FISC), Fleet and Mine Warfare Training Center, Naval Regional Medical Center (NRMC), and Naval Station.

The locations of these land holdings and occupants are shown in Figure 1-3. CNSY controls the spoil area to the east of the Cooper River and the majority of the central one-third of the developed area on the west bank of the river. There are no current plans to excess the spoils area east of the Cooper River or the NRMC. The southern third of the main part of the base is controlled primarily by the Naval Station. FISC and the Naval Station are the major landholders on the northern third of the developed area. FISC also controls the Chicora Tank Farm adjacent installations's western boundary.

1.3 Installation Restoration Program

The Department of Defense (DOD) Installation Restoration Program (IRP) was developed to satisfy requirements for DOD units under the Superfund program, authorized by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Under the IRP, the Department of the Navy created the Navy Assessment and Control of Installation Pollutants (NACIP) program to identify, assess, and control environmental contamination from past use and disposal of chemicals and other materials. Per the NACIP program, an Initial Assessment Study (IAS) and Confirmation Study (CS) were completed and submitted to the SCDHEC in 1983.

1.4 Regulatory History

RCRA/HSWA

Following the NACIP activities, a RCRA Facility Assessment (RFA) was completed in August 1987 to meet the requirements of HSWA. The RFA is designed to evaluate releases of hazardous waste or hazardous constituents to the environment and to implement corrective actions, as necessary, under HSWA. The RFA identifies information on Solid Waste

Management Units (SWMU) and areas of concern (AOC) at RCRA facilities, evaluates the potential for release to the environment, and determines the need for further investigation.

For purposes of the RFA/RFI process, the USEPA Region IV has defined SWMUs and AOCs as follows:

- **SWMU** — "Any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA-regulated hazardous waste management units are also solid waste management units. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities (e.g., product or process spills)."

- **AOC** — "Any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Regional Administrator to pose a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial actions as required under Section 3005(c)(3) of the Resource Conservation and Recovery Act and 40 CFR §270.32(b)(2) in order to ensure adequate protection of human health and the environment."

On May 4, 1990, the Commander, CNSY was issued a RCRA Permit for the storage of hazardous wastes. Conditions of the permit include identifying SWMUs and AOCs, conducting RFAs and RFIs, and performing necessary corrective measures.

BRAC

Transfer of federal property to non-federal parties is governed by the Community Environmental Response Facilitation Act (CERFA), which requires that deeds for federal transfer of previously

Figure 1-3 Locations of Land Occupants

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contaminated property contain a covenant that all remedial actions necessary to protect human health and the environment have been taken. The environmental investigation and restoration of NAVBASE land parcels is governed by the BRAC Cleanup Team (BCT). The role of the BCT is described further in Section 6.

The major outcomes of BRAC impact on the RFI at NAVBASE include:

- Identifying a large number of AOCs/SWMUs through the environmental baseline survey (EBS);
- Identifying a schedule for completing all investigations within the overall base closure schedule; and
- Establishing discrete investigation zones within the activity, consistent with ultimate plans for investigation and environmental restoration.

1.5 Inventory of SWMUs and AOCs

The SWMUs and AOCs identified at NAVBASE are presented in Appendix A. To date 142 SWMUs and 196 AOCs have been designated by the USEPA. This list of sites is subject to increase if additional sites are identified during the course of the RFI. Presently, RFAs have either been written or are in the process of being written for all the sites listed. The tables also include proposed recommended actions for each SWMU and AOC based information obtained during the RFAs and EBS.

- Appendix A-1 presents all SWMUs.
- Appendix A-2 presents all AOCs.

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2.0 TECHNICAL APPROACH

This section outlines a general overview of the technical requirements of the RCRA corrective action process which begins with the RFA and proceeds through corrective measures if necessary. Figure 2-1 summarizes sequence of events and illustrates how various stages of the process are interrelated.

RFA

The RFA focuses primarily on collecting all available data to ascertain the current status of a site and deciding on an appropriate course of action for the site. Based on the available information, three possible investigative designations for each SWMU and AOC, as discussed in the RFA.

- NFI — No Further Investigation at this time. There is no reason (i.e. visual, documentation, etc.) to suspect that a release has ever occurred. These sites will not be mentioned in the zone specific work plans.
- RFI — A RFI will be performed if historical information suggests that an event(s) capable of environmental impact occurred, analytical data from past investigations indicates the presence of contamination, or if additional work is considered necessary to determine a more accurate assessment of impacts. If a SWMU/AOC is within the boundaries of another SWMU/AOC considered for an RFI, it will be incorporated into the RFI of the larger site.
- CSI — A confirmatory sampling investigation (CSI) will be performed in there is evidence of past releases, potential migration pathways, or a lack of a thorough assessment of the hazards associated with SWMU/AOC. Even if there is no evidence of a release, a CSI may be recommended due to the migration potential or design features of the SWMU/AOC. Generally, information resulting from a CSI will support the redesignation of the investigative approach of an AOC or SWMU as a RFI or NFI. Work Plan Development

The identification of sites requiring further investigation necessitates the development of work plans to govern the conduct of the data collection and evaluation efforts. Specifically for the NAVBASE RFI, a Comprehensive and Zone Specific RFI Work Plans are being developed. The purposes and general content of each is discussed below.

Comprehensive Work Plan

The RFI Work Plan which was developed before the notification of new SWMUs and AOCs in August 1993 and the announcement of base closure, was technically inadequate to guide the investigation of a large number of sites. The identification of additional sites necessitated a complete reevaluation of the approach to the RFI Work Plan. To achieve consensus with USEPA and SCDHEC regarding the investigative activities throughout NAVBASE, a comprehensive RFI Work Plan is proposed that will govern all such activities, regardless of the specific zone or site under investigation at any time. The Comprehensive Work Plan contains these elements:

- Project Management Plan — to identify the technical approach, project management team and schedule.
- Sampling and Analysis Plan — to specify sample collection, analysis protocols, field and laboratory quality assurance. Subcontract laboratory quality assurance manuals will be submitted as part of the plan for USEPA's approval.
- Data Management Plan — to establish the guidelines for creating a data record and presenting conclusions of the investigation.
- Baseline Risk Assessment Plan — to address the human health and environmental risks associated with specific NAVBASE sites/zones. This plan also includes the proposes method to determine a measure of concentration for chemicals of potential concern (COPCs).
- Health and Safety Plan — to specify health and safety requirement for all investigative activities.

Figure 2-1 Corrective Action Flow Chart

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Zone-specific Work Plans

To effectively coordinate the conduct of the RFIs, while prioritizing those investigations as determined by the BCT, NAVBASE has been subdivided into discrete zones for investigation and potential transfer to nonfederal entities. Figure 2-2 illustrates the boundary of the zones. Appendix B contains enlarged versions of the zone maps which also include SWMU/AOC locations. Zone-specific work plans will identify the sites within each respective zone, provide a summary of historical information, identify presumptive remedies, data gaps, and outline the sampling plan (e.g., number and location of soil borings, monitoring wells, soil-gas detection points, air monitoring stations). The identification of these elements of the plan will essentially define the objectives of the investigation. The ultimate goal of the investigation is to determine nature and extent of contamination, assess risks posed to human health and the environment, and collect appropriate data to support a corrective measures study. The process of collecting data to meet the objectives may be an iterative loop as illustrated in Figure 3-2. The development of an investigative strategy for a given zone will consider investigative activities in adjacent zones to ensure data collection efforts along zone boundaries are complementary and not duplicative. Additionally, ongoing efforts of other regulatory programs such as underground storage tanks (UST) will be evaluated to use available data and once again avoid duplication.

Data Collection

Defining the nature of potential contaminants or chemicals of potential concern (COPC) is the initial step in the RFI data collection process. This step is highly dependent upon the quality (as defined by data quality objectives or DQOs) of the available or to be collected. and is typically accomplished by collecting a minimal number of highly biased samples following DQO Level III and IV protocols and procedures. In addition to establishing initial measures of concentrations of COPCs present, the data will be used to determine presumptive remedies and preliminary remediation goals (PRGs) for each investigational unit. The identification of presumptive remedies and PRGs at this stage should promote focused data collection and allow technology-specific data to be collected during the RFI/CSI. If no COPCs are identified during the

confirmation sampling then no further investigation may be required of that site. In some instances, COPCs may have been identified during data collection efforts from previous environmental programs such as the Navy's IR program which preceded development of the RFI Work Plan.

Based on the defined data needs, any potentially applicable screening methods will be identified. In the event that field screening technology are not appropriate/available for site constituents, or time constraints do not allow for a multiphase investigative approach, then it will be necessary to collect additional DQO Level III and IV data in order to determine distribution of COPCs with a sufficiently high degree of confidence. The chemical data will be used to determine the extent of the COPCs. For purposes of the RFI, extent is defined as the horizontal and vertical area in which the concentrations of hazardous constituents in the environmental media being investigated are above detection limits or background concentrations indicative of the region, whichever is appropriate.

If the initial sampling efforts are inadequate to complete the RFI, every effort will be made to complete the investigation during a second phase. Field personnel will not demobilize between phases. To the greatest extent possible, the results of the initial phase investigation, as well as field data and/or observations generated during a second phase of the investigation, will be utilized to adjust and/or redirect the Phase II efforts in order to maximize the amount of information obtained regarding the horizontal and vertical extents of possible contamination at the site. Adjustments to the Phase II scope of work may include, but may not be limited to: 1) sampling of additional media which are not already included in this work plan; 2) installation of additional monitoring wells; and 3) performance of full-scale aquifer tests or other studies to further characterize the hydraulic properties of the soil or aquifer matrix. Methods which are not detailed in the current CSAP for the sampling and analysis of additional site media will be prepared and submitted for regulatory agency approval if necessary. However, sampling and/or analysis will not be performed on media for which the associated procedures are not described

Figure 2-2 Zone Boundaries

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in the approved Comprehensive RFI Work Plan. Furthermore, additional data from other site investigations may become available prior to or during the completion of Phase II activities at this site. This could warrant a change in the scope of work proposed in this work plan.

Baseline Risk Assessment and Background

Determination of background concentrations will proceed in parallel with the site specific investigations. Methodology and rational for background determination is discussed in greater detail in the Comprehensive RFI Work Plan, Volume III. Briefly, a variable grid-based sampling scheme will be used to determine sampling locations. Locations that are sufficiently far away from any SWMU or AOC, to be agreed upon by consensus, will be used to estimate mean background level. If sufficient precision in this estimate cannot be achieved using these samples, supplemental tools, as outlined in the Baseline Risk Assessment (BRA), will be used to determine origins of environmental media onsite to facilitate the identification of comparable sampling sites offsite. Once a consensus decision regarding finalized background levels has been reached, they will be used to identify PRGs as mentioned above. These will be fed back into the site specific data collection process to assist in determination of endpoints for the RFI and CMS.

PRGs will help identify sampling endpoints, and their calculation will include information from initial analytical results, estimated background levels, historical data from the RFA, and any other pertinent data evaluated on the basis of estimated human health and ecological impacts. The EPA recommended residential scenario will be used as the default for establishing the PRGs. Later risk management decisions will consider all available scenarios. The estimated risk/hazard projected for each chemical of potential concern will be used to develop a list of site specific chemicals of concern (COCs), with consideration also given to the human health and ecological concerns related to corresponding background constituent concentrations.

Remedial goal options (RGOs) will be developed in instances where attainment of PRGs are demonstrated to be technically impracticable from an engineering perspective or where other circumstances prohibit achieving the initial goals. In such a case, the RGOs will be developed in consultation with USEPA, SCDHEC, and the Navy.

Corrective Measures Study

The corrective measures study will technically begin with the identification of presumptive remedies early on in the investigative process although a detailed evaluation of the alternatives will not begin until after the data collection efforts have started. The data shall be used to design the most appropriate and cost effective remedial action for each site.

RFI Reports

A RFI report will be generated for each investigative zone upon completion of field work within the respective zone. One final, comprehensive report summarizing all of the zone reports and addressing NAVBASE as a single entity will be written upon completion and regulatory review of the final zone report.

2.1 Orientation Meeting

Before performing any field activities at the NAVBASE, sampling personnel will attend an orientation meeting summarizing general and site-specific requirements for sampling and documentation at NAVBASE. General topics to be discussed will include the base location, the locations of the site office trailer, subject site, decontamination area within the base; and the Comprehensive Health and Safety Plan (CHASP). Sampling requirements to be discussed will include general sampling protocol, the Unified Soil Classification System (USCS), use of the stainless-steel sampling sleeves if applicable, the sample numbering system, quality assurance/quality control (QA/QC) sampling requirements, and sample packaging. Documentation requirements to be discussed will include the use of field forms, field logbooks, and documentation of photographs. A checklist of requirements and an acceptance form

indicating the above items have been reviewed by sampling personnel are provided in Appendix A.

2.2 General Sampling Requirements

General procedures for field personnel to follow when collecting environmental samples are included in this section. Detailed sampling procedures are discussed in Sections 4, 6, 7, 8, and 9. These general procedures are designed to prevent cross-contamination of samples.

General Sampling Procedures:

- Field sampling teams will have at least two people. One person will collect the sample as the other ensures adherence to the sampling procedures, records any difficulties encountered, and documents other information pertinent to the investigation. When sampling using the peristaltic pump/vacuum jug technique (often the preferred method for shallow wells where turbidity is of concern), the recommended order of collection is metals, cyanide, pesticides/PCBs, volatiles.
- All sampling activities in each medium will proceed from the area of least contamination to greatest contamination, if possible. If free product or contaminant-saturated media are encountered, collect grab samples there.
- The preferred order of sample collection in all media will be as follows (on a parameter basis): volatile organic analysis (VOA), total organic carbon (TOC), semivolatile organic compounds (SVOA), pesticides, herbicides, polychlorinated biphenyls (PCB), total metals, dissolved metals, cyanide, inorganics, and turbidity.
- The sampler will don a clean pair of protective gloves before collecting each sample.
- Samples for chemical analysis will be collected with either disposable sampling devices or decontaminated, stainless-steel or Teflon™ devices. When composite samples are required, they will be homogenized in stainless-steel bowls. All sampling equipment will be decontaminated in accordance with the procedures outlined in Section 15 of this plan.

- Disposable sample equipment will be constructed of Teflon™. The device will be decontaminated by the manufacturer before shipment to the site. An equipment rinsate blank will be collected before use.
- Fill all sample bottles, except for volatile organic analysis (VOA) bottles, to the shoulder to compensate for temperature and pressure changes during transport. If the container is filled below the shoulder, mark the level with a permanent marker or grease pencil. VOA bottles will be filled until there is zero headspace.
- Samples collected for VOA analysis will not be homogenized.
- All samples requiring chemical preservation shall be preserved immediately after field collection or the bottles may be preserved before sample collection.
- After collection, samples exhibiting obvious visual or olfactory contamination will be separated from the samples not exhibiting such evidence of contamination.
- Precleaned sample containers will be provided by the analytical laboratory except for the stainless-steel sleeves used for soil sampling, which will be decontaminated onsite. All data relative to sample container integrity shall be documented in the site log.
- Heterotrophic plate count samples will be collected with sterile containers and scoops provided by the laboratory.

Sample Processing:

Some of the analyses to be performed on selected samples require them to be preserved immediately after collection to maintain their integrity, as per the following procedures:

- Clearly identify the chemical preservative on the sample label.
- Chill all samples to 4 degrees centigrade (°C) immediately after collection and during shipment to the laboratory. In each cooler, include a 40-milliliter (ml) vial of tap water as a temperature blank or place a temperature strip on a sample bottle to measure its temperature at the time of receipt. If possible, samples from different sites will not be placed in the same cooler.

- Handle the samples as infrequently as possible. Use extreme care to ensure samples are not cross-contaminated. Use sealable plastic bags to protect samples from cross-contamination.
- A trip blank, prepared by the laboratory, will be shipped with each set of samples to be analyzed for VOA. It is not necessary to refrigerate trip blanks before use; store in a dust-free, organic-free environment away from fuels, solvents, and volatile compounds. Discard any trip blanks with bubbles larger than a pinhead.
- Avoid headspace (bubbles) in all VOA samples. VOA samples effervescing due to dissolved gases or high carbonate content will not be preserved with hydrochloric acid (HCl). Document unpreserved VOA samples on the chain-of-custody form and notify the laboratory before shipment.
- Identify and fully document all samples in the field logbook, on the chain-of-custody forms, and on the sample labels. Refer to the specific instructions for completing sample labels and chain-of-custody forms in Sections 11.3, 11.4, and 11.5 of this plan. Document all samples in accordance with the DMP.
- Follow chain-of-custody procedures to assure sample custody is maintained in a reliable manner and to assure each step in transportation to the laboratory is documented. This process will be initiated in the field and followed throughout the sampling process. Document chain-of-custody in accordance with the procedures described in Section 11.5 of this plan.
- Every effort will be made to ship all samples overnight to the laboratory on the day of collection via express air courier. Refer to Section 11.3 for sample shipment procedures. Record airbill numbers on the chain-of-custody forms.
- The laboratory will be notified in advance of sample shipment.

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3.0 INVESTIGATIVE STRATEGY

This chapter describes and summarizes the installation-wide environmental restoration and compliance strategy for NAVBASE. Prior to the announcement of the Base Realignment and Closure Commission, the IRP effort was in the early stages of the RFI to identify and characterize environmental contamination. With the closure announcement, the strategy shifted to expediting the investigation and moving more to remediation to facilitate property disposal. Figure 3-1 provides a flowchart illustrating the steps necessary to environmentally restore NAVBASE and transfer the property to the community.

The strategy for determining the most effective response mechanism for contaminant sources and contaminated areas is being performed on a case-by-case basis by the BCT. The BCT has developed a comprehensive strategy to identify the appropriate regulatory programs applicable to the areas of contamination discovered during the closure process.

3.1 Zone Designation and Strategy

Zone Designations

All NAVBASE investigations and subsequent remedial activities are being conducted under the RCRA process. As such, the base has been subdivided into investigative zones, which are described in Table 3-1. Since these zones are for investigative purposes only, it is possible they will be further subdivided or integrated as the investigation proceeds. Any subdivision will be given a number designation with a corresponding zone letter designation (i.e., A-1, A-2, A-3, etc.). If the information collected from the groundwater sampling indicates a wide spread problem overlapping established zones, the groundwater itself may be designated as an additional zone. The industrial portion of the sanitary system will require investigation as a separate unit due to the magnitude and need to establish the condition of the system before conveying property to industrial users whose operations could potentially have an adverse effect on the lines. Since the railroad system also traverses multiple zone boundaries, it will likely be investigated concurrently with the sewer system.

In response to base closure environmental restoration goals, the BCT Project Team has divided the base into 12 investigative zones. These zones encompass the entire area of the base, as well as the non-contiguous properties. The zones were established based on the following criteria:

- Areas which pose the greatest environmental concern.
- Areas for which similar contaminants are expected or similar types of activity have occurred.
- Areas small enough to be manageable.
- Areas based upon existing geographical features.
- Areas that can be investigated quickly.
- Areas of significant community interest.

Zones A through L contain all of the original SWMU sites on the base as well as the additional SWMUs and AOCs that are in the RFA.

3.2 Sequence of Zones

A comprehensive strategy for sequencing these investigative zones has been developed by the BRAC Cleanup Project Team. This strategy involves prioritizing the zones based on actual or potential reuse. A schedule based on the best available information is presented in the Corrective Action Management Plan (CAMP). As stated in the CAMP, this schedule is subject to change periodically.

The current strategy is to use multiple teams of contractor personnel to perform the investigation. Through the use of multiple investigative teams, several zones will be investigated simultaneously. A quick-response team also will be used to handle areas that are targeted for rapid turnover.

Figure 3-1 Environmental Restoration Flowchart

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Table 3-1
Zone Descriptions
NAVBASE

Zone A	This zone is located at the extreme northern portion of the main base, and includes all base areas north of Noisette Creek.
Zone B	This zone is composed of the base golf course and senior officers housing areas.
Zone C	This zone is composed of administrative areas, additional housing areas, warehouses, and the base coal pile.
Zone D	This zone consists of property and facilities between Reynolds and McMillan avenues. It contains primarily parking areas and warehouses.
Zone E	This zone is located on the waterfront and includes the shipyard industrial areas and dry docks.
Zone F	This zone is located in the central portion of the base, and includes the area between Hobson Street, Carolina Street, the eastern base boundary, Wood Street and 11th Street.
Zone G	This zone, also located in the central portion of the base, includes the FISC petroleum facilities as well as the Chicora Tank Farm. The Chicora Tank Farm is not located on the base itself, but is located approximately 0.5 miles east of the base. However, since Chicora is connected to the base via pipeline easements, it is included in Zone G.
Zone H	This zone is at the southern end of the base. It contains properties identified for the State Department transfer as well as Naval support activities, training areas, and administrative areas.
Zone I	This zone comprises the remainder of the southern end of the base. It includes the waterfront property from Halsey Street to the southern tip.
Zone J	This zone includes the water bodies such as the creeks, wetlands, and the Cooper River.
Zone K	This zone is composed of all additional non-contiguous properties (the Short Stay recreational facility, the antenna site on Sullivan's Island, the Naval Annex, the island, and the downtown degaussing facility).
Zone L	Industrial Sanitary Sewer and Railroad System

If at any point during the investigation of a site, sufficient information becomes available to support corrective measures studies/action or to determine that no further investigation is needed at that time (with the concurrence of USEPA and SCDHEC), investigative activities will be terminated.

4.0 CORRECTIVE MEASURES

4.1 Early Actions Strategy

Several sites have been tentatively identified for early actions. These include:

- Multiple unexploded ordnance sites.
- Defense Reutilization and Marketing Office (DRMO) lead contamination in Zone A (SWMU 2).
- Old Public Works Department Storage Area (SWMU 6).
- Multiple UST sites.

4.2 Remedy Selection Approach

Remedies will be selected in accordance with statutory and RCRA Corrective Measures Study criteria. The BCT will involve all parties who have an impact on the remedies selected. An important source of input will be the Restoration Advisory Board (RAB). Particular attention will be given to the following items when evaluating alternatives:

- Background concentrations, particularly of inorganic compounds.
- Land use/risk assessment. Risk assessment protocols will incorporate future land use in its exposure scenarios.
- Basewide treatment facilities.
- Applicable remedies. The presumptive remedy approach advocated in USEPA's 30-day study will be applied in selected cases.
- POL remedies. Source-specific actions for petroleum, oils, and lubricants will be addressed under South Carolina's UST program as POL releases have occurred mostly as a result of leaking UST's. Any groundwater contamination that can be determined to be originating from a specific leaking UST will be remediated under existing state UST regulations, otherwise the appropriate groundwater remediation will be included in the IRP.

BCT Project Team meetings will be held to discuss presumptive remedies early in the RFI process to ensure the RFI focuses on gathering the appropriate types of data to support remedial design.

4.3 Corrective Action Management Units (CAMU) and Temporary Units (TU)

Corrective actions, resulting from RFIs and subsequent Corrective Measures Studies (CMS), will generate remediation wastes within each zone. NAVBASE may employ CAMUs within the corrective actions implemented under the RCRA permit. Complying with 40 CFR 264 Subpart S, a CAMU will be used exclusively for managing remediation wastes resulting from implementing corrective actions. Moreover, it may be necessary to use TUs for temporary storage or treatment of hazardous remediation wastes during remediation activities.

5.0 PROJECT SCHEDULES

5.1 Compliance Schedule

The HSWA portion of the Part B permit contains a facility submission or compliance schedule based on task vs. duration for completing the RFI/CMS. The schedule presented in Table 5-1 does not include specific dates for milestones because the start dates for some of the tasks are not currently known. A Corrective Action Management Plan (CAMP), which contains a proposed calendar-based schedule, has been prepared and submitted concurrently with the Comprehensive RFI Work Plan.

5.2 Meeting Schedule

Meetings are scheduled as required by the applicable program. Meetings are typically held as follows:

- Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) and naval base personnel: Bi-weekly to share information, discuss and resolve any cross-functional problems.
- BECs and CLEAN Contractor: Monthly partnering sessions to ensure consistency of approach and deliverables between the SOUTHNAVFACENGCOM Comprehensive Long Term Environmental Action Navy (CLEAN) contractors. This also provides access to private sector contractors' expertise regarding property transfer.
- RAB: As needed.
- BRAC Cleanup Team: Monthly, and more often as necessary.

Table 5-1
Facility Submission Summary

Facility Submission Requirements	Due Date
Notification to USEPA of Discovery of New SWMUs/AOCs.	Within 15 Days of Discovery.
RFA Information	Within 90 Days of Notification.
RFI Work Plan	120 Days After Effective Date of Permit.
RFI Progress Reports	Quarterly Beginning 90 Days from Implementation of RFI Work Plan.[1]
Draft RFI Report	90 Days after RFI Completion.
Final RFI Report	30 Days after Receipt of USEPA and SCDHEC Comments on Draft RFI Report.
Interim Measures Progress Reports	Semi-annually beginning 180 Days from Implementation of IM.[1]
Interim Measures Report	Within 90 Days of Completion.
Imminent Hazard Report	Oral Within 24 Hours; Written Within 15 Days
Corrective Measures Study/Plan	As Determined by the USEPA and SCDHEC after Review of RFI and Permit Modification.[2]

Notes:
[1] — This applies to Work Plan execution that requires more than 180 days.
[2] — The BCT has agreed that the CMS and Baseline Risk Assessment will be completed as much as possible in conjunction with the RFI rather than in sequence.

6.0 PROJECT MANAGEMENT RESPONSIBILITIES

6.1 NAVBASE

In general, NAVBASE is responsible for ensuring conditions of the permit are satisfied. As previously mentioned, ultimate responsibility is held by the Commander, CNSY. Within NAVBASE, the Occupational Safety, Health and Environmental Office, Code 106, is responsible for compliance with the permit conditions.

6.2 SOUTHNAVFACENGCOM

The SOUTHNAVFACENGCOM EICs, Mr. Matthew A. Hunt and Mrs. Thuane B. Fielding, are responsible for the technical and financial management of the IR program activities at NAVBASE Charleston. They prepare the project statement of work; manage the project scope, schedule, and budget; and provide technical review and approval of all deliverables. They will be responsible for approving changes in the IR program scope of work.

6.3 EnSafe/Allen & Hoshall

EnSafe/Allen & Hoshall (E/A&H) is under contract to SOUTHNAVFACENGCOM to design and implement the RFI at NAVBASE. Resumes of key personnel who will be working on the project are included as Appendix C.

6.4 BRAC Cleanup Team

The NAVBASE BCT has been established and is composed of two BRAC Environmental Coordinators (BECs) representing DOD, a USEPA Region IV representative, and a SCDHEC representative. Formal BCT meetings are held each month and provide the means of conducting periodic program reviews and attainment of consensus on decisions with federal and state regulators. An ongoing dialogue is accomplished by having a USEPA team member located onsite and having access to the SCDEHC local district office. The BRAC Cleanup Project Team includes representatives of USEPA Region IV, SCDHEC, SOUTHNAVFACENGCOM, NAVBASE and other key participants including the Building Economic Solutions Together

(BEST) Committee and other technical consultants. A list of the team members and specifies their roles and responsibilities is included as Appendix D.

7.0 COMMUNITY INVOLVEMENT/STRATEGY

A Community Relations Plan (CRP) has been implemented to encourage open communication among NAVBASE; federal, state, and local regulatory agencies; interested community groups; and, individual community residents regarding environmental activities initiated at NAVBASE in connection with it's closure. The CRP will ensure that all interested individuals, groups, or offices are provided accurate, consistent information throughout the base closure process. All information will be timely and will relate to cleanup activities, contaminants identified, possible effects of any contamination identified, and remedial actions proposed for any contamination found on the base. The CRP provides several ways for all parties to provide input into the decision-making process of the IRP.

The Charleston BCT has adopted the following strategy to encourage and support a proactive community relations program that will meet or exceed requirements of current environmental legislation (e.g., CERCLA, RCRA, HSWA, etc.):

- Publish points of contact on the base for information on the BRAC cleanup actions.
- Develop a list of speakers for making presentations to community groups regarding BRAC cleanup initiatives.
- Update CRP as needed (add activities that will ensure continuous and timely information is made available, add individuals, groups, and offices to the mailing list, etc.).
- Publish information frequently to keep the community up-to-date on the progress of environmental restoration and disposal programs (e.g., fact sheets, media releases, paid ads, etc.).
- Hold 30-day public comment periods on proposed actions and respond to all comments in a responsiveness summary.
- Hold informal and formal public meetings when needed or required during the BRAC clean up process (e.g., to explain the Navy's approach to the BRAC cleanup, proposed actions to cleanup the base or specific sites, required meetings during the response process, etc.).

- Provide an opportunity for public comment on removal actions selected for the base.
- Establish and maintain an information repository to make documents available to the public.
- Establish a RAB from the Technical Review Committee (TRC) to provide a forum for public involvement.

APPENDIX A
SOLID WASTE MANAGEMENT UNIT SUMMARY LIST
AND AREAS OF CONCERN LIST

APPENDIX A-1
SOLID WASTE MANAGEMENT UNIT SUMMARY

APPENDIX A-2
AREA OF CONCERN SUMMARY

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
524	AOC	Substation (415A)	PCBs Petroleum Products	NFI	Along Carolina Avenue	D
675	AOC	Fuel Oil Storage (NS-4)	Petroleum Products	CSI	Along Thompson Ave.	I
561	AOC	Substation (451B)	PCBs Petroleum Products	CSI	Along Carolina Avenue	E
509	AOC	Hazardous/Flammable Storage (1079)	**Unknown**	NFI	Along West Property Border	C
693	AOC	Fuse and Primer House (117)	Petroleum Products Reactives	CSI	Along Submerged Dredge Line	K
510	AOC	General Purpose Laboratory (NH-21)	Methyl Ethyl Ketone Acetone Methylene Chloride Solvents	CSI	Avenue H	C
504	AOC	Railroad System	Petroleum Products Batteries Lead Acids Coal Unknowns	RFI	Basewide	L
655	AOC	Oil Spill Area Behind Base Exchange	Petroleum Products	RFI	Behind Base Exchange	H
678	AOC	Firefighting School (2-V)	Petroleum Products	CSI	Building NS-1 Area	I
679	AOC	Wash Rack	Paint Petroleum Products	CSI	Building NS-1 Area	I
677	AOC	Building NS-2 Grounds	Petroleum Products	RFI	Building NS-2	I
527	AOC	Transformer House (24)	PCBs Petroleum Products	NFI	Building 2 Area	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
529	AOC	Building 2A Coating and Spray Systems	Aluminum Miscellaneous	RFI	Building 2A	E
535	AOC	Latrine (28)	Organic Wastes Heavy Metals	NFI	Building 2 East	E
534	AOC	Latrine (27)	Organic Wastes Heavy Metals	NFI	Building 2 East	E
532	AOC	Building 2 Copper Tank	Copper	NFI	Building 2	E
676	AOC	Incinerator	**Unknown**	CSI	Building NS-2 Area	I
533	AOC	Switching Substation - Formerly Building 460/1965 (138)	PCBs Petroleum Products	NFI	Building 2 SE corner	E
545	AOC	Building 3 Surface Coating	Epoxy Miscellaneous	NFI	Building 3	E
551	AOC	Boilerhouse, Pier 314 (1119)	Petroleum Products	CSI	Building 3 SE	E
543	AOC	Plating Plant Formerly Building 226 (NSC1026)	Zinc Inorganic Acids	CSI Investigate w/ SWMU 23	Building 3 Area	E
540	AOC	Plating Plant - Formerly Building 226/1975 (73)	Heavy Metals Cyanides	CSI	Building 3 NE corner	E
549	AOC	Scrap Yard (1054)	Metals Miscellaneous	NFI	Building 5 Area	E
547	AOC	Building 5 Fiberglass Shop	Fiberglass Process Resins Miscellaneous	NFI	Building 5	E
548	AOC	Building 5 Elevator	Hydraulic Oil	NFI	Building 5	E
538	AOC	Building 6 Forge Shop	Lead	RFI	Building 6	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
660	AOC	Mosquito Control (31)	Pesticides	CSI	Building NS-6 Area	H
539	AOC	Building 6	Zyglo	RFI	Building 6	E
574	AOC	Building 9 Fuel Tank	Petroleum	RFI	Building 9	E
580	AOC	Pattern and Electric Shop (10)	Lead, Zinc, Solvents Degreasers	CSI	Building 10 South	E
587	AOC	Aviation Gas Storage (21)	Petroleum Products Lead	CSI	Building 11 East	E
586	AOC	Temporary Powerhouse (1014)	PCBs	NFI	Building 11 SE	E
577	AOC	Building 25 Paint Booth	Paint	NFI	Building 25	E
680	AOC	Building NS-26 NE Side	Asbestos As Waste	CSI	Building NS-26	I
569	AOC	Oil and Gasoline Service Station (40)	Solvents Degreasers Petroleum Products	RFI	Building 30 Attached to SW Corner	E
560	AOC	Disinfector (34)	**Unknown**	CSI	Building 32 South	E
559	AOC	Central Power Station (32)	Petroleum Products Combustion Products PCBs	RFI	Building 32	E
531	AOC	Switching Substation (459)	PCBs Petroleum Products	CSI	Building 35 West	E
530	AOC	Paint and Oil Storage (Facility 35)	Paints Possible Solvents Petroleum Products	CSI	Building 35	E
513	AOC	Parking Lot/Old Morgue	Formaldehyde Miscellaneous	CSI	Building NH-45 (SE)	C

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
698	AOC	Transformer Area near Building 53	Petroleum Producsts, PCBs	RFA	Building 53 (Near)	
664	AOC	Transformer Vault (X33A)	PCBs Petroleum Products	NFI	Building NS-53 Area	H
662	AOC	Building NS-54 Former Gas Station	Petroleum Products	RFI	Building NS-54	H
686	AOC	High Explosive Storage (54)	Explosives	NFI	Building X-54	I
687	AOC	High Explosive Storage (55)	Explosives	CSI	Building X-55	I
688	AOC	High Explosive Storage (56)	Explosives	CSI	Building X-56	I
546	AOC	Galvanizing Shop (1025)	Zinc Inorganic Acids	CSI	Building 56 and 74 (Between South end)	E
528	AOC	Building 59 Steam Cleaning Shop	Grease Waste Oil Miscellaneous	CSI Investigate w/ Sewer System	Building 59	E
621	AOC	Building 68 Battery Cracking Area	Lead Acids	RFI	Building 68	F
620	AOC	Building 68 Battery Shop	Acid Metals	RFI Investigate w/ SWMU 36	Building 68	F
618	AOC	Switching Substation (466)	PCBs Petroleum Products	NFI	Building 68 NW	F
628	AOC	Building 68 Southeast Area	Paint Blast Residue	CSI	Building 68	G
617	AOC	Building 69 Former Galvanizing Area	Metals Miscellaneous	CSI	Building 69	F

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
536	AOC	Switching Substation (460)	PCBs Petroleum Products	NFI	Building 74 North	E
568	AOC	Latrine, Pier 317 (26)	Organic Wastes Heavy Metals	NFI	Building 75 (Beside)	E
593	AOC	Incinerator (1711)	Organic Wastes Heavy Metals	RFA	Building 79 Area	E
590	AOC	Alley Between Buildings. 79 and 1760	Acetone Petroleum Products	CSI Possible Source for Sewer System	Building 79 and 1760 (Between)	E
575	AOC	Substation (454)	PCBs Petroleum Products	NFI	Building 80 (Attached)	E
576	AOC	Oil and Paint Storehouse/Print Office (1012)	Heavy Metals Paints Solvents	CSI	Building 80 Area	E
564	AOC	Disposal Pit Building 80	**Unknown**	CSI Investigate w/ Sewer System	Building 80 North Side	E
623	AOC	Stripper Concrete Tank (148)	Acetone Methylene Chloride	CSI Investigate w/ AOC 626	Building 98 SW	G
596	AOC	Torpedo Storage (101) Machine Shop Galvanizing Plant	Explosives Propellants Solvents/Degreasers Miscellaneous	CSI	Building 101 Area	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
595	AOC	Ordnance Wrecking Magazine/Oil & Paint Storehouse (1018)	Petroleum Products Paints Heavy Metals	NFI	Building 101 SW	E
695	AOC	Electric Locomotive Shed (119)	Solvents Degreasers	CSI	Building 117 SW	K
638	AOC	Torpedo Workshop (132)	Explosives Propellants	CSI	Building 132	G
639	AOC	Alcohol Storage	Alcohol	NFI	Building 132 Area	G
636	AOC	Torpedo Magazine (160, 161, 162)	Explosives Propellants	CSI	Building 161	G
637	AOC	Dump Area	**Unknown**	CSI	Building 161 Area	G
673	AOC	Paint and Oil Storehouse (169) Flammable Storehouse	Paints Petroleum Products Solvents Degreasers	CSI	Building 169	I
571	AOC	Building 177 Paint Booths	Paint	RFI	Building 177	E
563	AOC	Locomotive House (37)	Solvents and Degreasers	CSI	Building 177 Area	E
578	AOC	Transportation Shop and Garage (25)	Petroleum Products Lead Solvents Degreasers	RFI UST Removal Underway	Building 177 SW	E
573	AOC	Building 177 Anodizing	Miscellaneous	CSI	Building 177	E
572	AOC	Building 177 Motor Area	Petroleum Products Miscellaneous	RFI	Building 177	E
606	AOC	Building 187 Paint Booth	Paint	NFI	Building 187	F

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
517	AOC	Building M-192 Range	Lead Metals Miscellaneous	CSI	Building M-192	C
566	AOC	Building 194	Paint	CSI Investigate w/ PAOC 168	Building 194	E
567	AOC	Substation (75)	PCBs Petroleum Products	NFI	Building 195 East	E
522	AOC	Grease and Wash Building (M-1252)	Petroleum Products	CSI Investigate w/ Sewer System	Building 198 SW	C
523	AOC	Gas Station Storage (M-1234)	Petroleum Products	CSI	Building 198 South	C
526	AOC	Building 212 Paint Area	Paint	RFI	Building 212	E
588	AOC	Building 218 Paint Booth	Paint	NFI	Building 218	E
544	AOC	Building 221 Pickling Plant	Lead Miscellaneous	RFI	Building 221	E
525	AOC	Building 223 Paint Shop	Paint	NFI	Building 223	E
634	AOC	Flammable Storage Shelter (1814)	**Unknown**	CSI	Building 224 SW	G
633	AOC	Substation (451C)	PCBs Petroleum Products	CSI	Building 224 West	G
542	AOC	Building (22) Acetylene Plant (1922-1930s) Paint Shop (1930s-1950s)	Acetylene Paints Possible Solvents	CSI	Building 226 Area	E
541	AOC	Oil Storage Shops (38)	Petroleum Products	CSI	Building 226 Area	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
537	AOC	Substation (342)	PCBs Petroleum Products	NFI	Building 228 Attached	E
516	AOC	Building 233 Wash Area	Acid Petroleum Products	RFI	Building 233	C
515	AOC	Building 51 Incinerator (1920s-1930s), Paint Shop (1930s-1940s)	Paints Solvents Unknowns	CSI	Building 233 Area West	C
583	AOC	NE Corner Building 236	Freon Petroleum Products	CSI	Building 236	E
581	AOC	Waterfront Substation and Radio Lab (20)	PCBs	NFI	Building 236 Area	E
582	AOC	Substation (455)	PCBs Petroleum Products	NFI	Building 236 North	E
615	AOC	Parking Lot/North Northeast of Building 240	Epoxies and Resins	CSI	Building 240 Parking Lot NNE of	F
610	AOC	Building 241 Paint Booth	Paint	NFI	Building 241	F
614	AOC	Building 242 Paint Booth	Paint	NFI	Building 242	F
613	AOC	Between Buildings 241, 242, 255 (Old Locomotive Shop)	Petroleum Products	RFI	Building 242, 242, 255 (Between)	F
632	AOC	Substation (124)	PCBs Petroleum Products	NFI	Building 325 South	G
674	AOC	Paint Storage (RTC 4)	Paints Heavy Metals Solvents	NFI	Building 330 South	I
661	AOC	Explosives Storage	Explosives	CSI	Building 601 Area South	H

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
656	AOC	Between Buildings 602 & NS-71	Petroleum Products	CSI	Building 602 and NS-71 (Between)	H
652	AOC	Building 636 Spray Booth	Paint	NFI	Building 636	H
657	AOC	Engine Overhaul Facility (645)	Solvents Degreasers Petroleum Products Chlorofluorocarbons	NFI	Building 645	H
654	AOC	Septic Tank and Drain Field (1718) (abandoned)	Organic Wastes Heavy Metals	CSI Investigate w/ SWMU 9	Building 661 Area	H
503	AOC	UXO Site South of Building 665	2 Mark 17 Depth Bombs	CSI Investigate w/ EOD Team	Building 665 (South)	H
651	AOC	Sandblasters, Inc. Storage Area	**Unknown**	CSI	Building 672 East	H
650	AOC	Metal Trades, Inc. Storage Area	**Unknown**	CSI	Building 672 East	H
511	AOC	Oil House (16)	Petroleum Products	CSI	Building 672 Area	C
649	AOC	Braswell Shipyards, Inc. Storage Area	**UnKnown**	CSI	Building 672 East	H
648	AOC	Transformer Vault	PCB Oils	NFI	Building 672 West	H
683	AOC	Transformer Vault	PCB Oils	NFI	Building 678 Area	I
682	AOC	Building 681 Spray Booth	Miscellaneous	NFI	Building 681	I
681	AOC	Blast Booth Building 681	Blast Residue	RFI	Building 681	I
554	AOC	Paint Shop/Locomotive Shed (1003)	Heavy Metals Acetone Xylenes Toluene	CSI	Building 1021 North	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
555	AOC	Latrine and Substation, Pier 314 (29)	Organic Wastes Heavy Metals PCBs	NFI	Building 1119 SE side	E
612	AOC	Substation (94)	PCBs Petroleum Products	NFI	Building 1172 SE	F
579	AOC	Paint Shop (1035)	Paints Heavy Metals	CSI	Building 1178 East	E
607	AOC	Building 1189 Dry Cleaning	Miscellaneous	RFI	Building 1189	F
570	AOC	Coal Storage Area	Coal Byproducts	RFI	Building 1199 Area	E
518	AOC	Coal Bins	Coal and Coal Byproducts	CSI	Building M-1257 Area	C
521	AOC	Oil Storehouse (1052)	Petroleum Products	NFI	Building M-1262 Area	C
605	AOC	Building 1278 Southwest Area	Miscellaneous	RFI	Building 1278	E
553	AOC	Service Station (136)	Petroleum Products Solvents Degreasers	RESERVED	Building 1295 South	E
658	AOC	Gas Storage (203)	Petroleum Products	NFI	Building 1303 East	H
609	AOC	Building 1346 Gas Station	Ethylene Glycol Petroleum Products	RFI	Building 1346	F
608	AOC	Paint Storage (1263)	Paints Heavy Metals	NFI	Building 1346 SW	F
653	AOC	Building 1508 MWR Hobby Shop	Petroleum Products Paint Miscellaneous	RFI	Building 1508	H
506	AOC	Flammable Storage Shelter (1629)	**Unknown**	CSI	Building 1603 (North)	A

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
592	AOC	Asbestos Shredding Shelter (1225)	Asbestos As Waste	CSI	Building 1760 South	E
668	AOC	Hazardous Material Storage (1899)	Oxygen Acetylene Welding Supplies	NFI	Building 1776 SW	H
505	AOC	Creosote Cross-Tie/Ballast Storage Area	Creosote	CSI	Building 1803 (Area around)	A
663	AOC	Gas/Diesel Pumping Station (851)	Petroleum Products	CSI	Building 1817 East	H
619	AOC	Oil Storage Yard	Petroleum Products	CSI	Building 1824, 1836, 316, 381 Area	F
669	AOC	Building 1888 Range	Lead	RFI Investigate w/ SWMU 14	Building 1888	H
684	AOC	Old Pistol Range (1888)	Lead	RFI Investigate w/ SWMU 14	Building 1888	I
665	AOC	Pyrotechnic Storage (159)	Pyrotechnic Explosives	CSI	Building 1889 Area	H
670	AOC	Field South of Building 1897	Lead Miscellaneous	RFI Investigate w/ SWMU 14	Building 1897 (Field South)	H
696	AOC	Transformer Area at Building 2509 (MOMAG 11)	Petroleum Products	RFA	Building 2509 (Outside)	K
697	AOC	Transformer Area near Building 2554 (MOMAG 11)	Petroleum Products, PCBs	RFA	Building 2554 (Near)	K

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
635	AOC	Paint and Oil Storehouse (3902)	Paints Petroleum Products Solvents Degreasers	RFI	Building 3902	G
642	AOC	Pistol Range	Lead Explosives	RFI	Buildings X-10, X-12, 1431 Parking Lot	G
589	AOC	Substation (85)	PCBs Petroleum Products	NFI	By River Road	E
666	AOC	Fuel Storage (NS-45)	Petroleum Products	CSI	By Osprey Street	H
667	AOC	CBU-412 Vehicle Area	Petroleum Products	RFI	CBU-412	H
646	AOC	Operational Storage (3906Q)	**Unknown**	CSI	Chicora Tank Farm	G
645	AOC	Transformer Vault (3906S)	PCBs Petroleum Products	NFI	Chicora Tank Farm	G
647	AOC	Transformer Vault (3906R)	PCBs Petroleum Products	NFI	Chicora Tank Farm	G
694	AOC	Former Naval Ammunition Depot	Explosives Heavy Metals	CSI Investigate w/ EOD Team	Clouter Creek Dredge Area	K
501	AOC	UXO Site in Cooper River East of Buildings X54 and X55	2 Mark 47 TORPEX Loaded Depth Bombs	CSI Investigate w/ EOD Team	Cooper River	J
556	AOC	Dry Dock Discharges	Miscellaneous	RFI	Dry Docks	E
552	AOC	Galvanizing Shop (1030)	Zinc Inorganic Acids	CSI	Dry Dock #1 NE corner	E
557	AOC	Latrine (1020)	Organic Wastes Heavy Metals	NFI	Dry Dock #1 South	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
558	AOC	Substation (77)	PCBs Petroleum Products	CSI	Dry Dock #1 South	E
562	AOC	Substation (84)	PCBs Petroleum Products	CSI	Dry Dock #2 South	E
603	AOC	Burning Dump	**Unknown**	CSI	Dry Dock #3 Area	E
602	AOC	Substation (95)	PCBs Petroleum Products	NFI	Dry Dock #3 SW	E
616	AOC	Paint Shop (1201)	Paints Heavy Metals	CSI	Dry Dock #3 SW	F
629	AOC	Tank Truck/Car Loading/Unloading Facility (3913)	Petroleum Products Waste Oil	CSI Investigate w/ AOC 626	Dry Dock #4 South	G
630	AOC	POL Sampling/Test Building (3914)	Petroleum Products	NFI	Dry Dock #4 South of	G
604	AOC	Substation (96)	PCBs Petroleum Products	NFI	Dry Dock #4 SW	E
565	AOC	Temporary Coal Bin (1006)	Coal and Coal Byproducts	NFI	Dry Dock #5 End	E
584	AOC	Substation (451H)	PCBs Petroleum Products	NFI	Dry Dock #5 South	E
631	AOC	Fueling Pier K (325)	Petroleum Products	RFI	End of 13th Street	G
601	AOC	Oil Pier (319)	Petroleum Products	NFI	End of 317-F	E
611	AOC	Grease Rack and Hobby Shop (1264)	Petroleum Products Solvents Degreasers Methylene Chloride	CSI	Football Field Area	F
626	AOC	NSC Fuel Farm	Petroleum	RFI	Fuel Farm Area	G

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
507	AOC	Oil Storehouse (1010)	Petroleum Products	CSI	Golf Course Area (1410)	B
627	AOC	Oil Spill Area at Hobson and Viaduct Road	Petroleum Products	CSI Investigate w/ AOC 626	Hobson and Viaduct Roads	G
514	AOC	Flammable Storage (1813)	**Unknown**	NFI	NH-55 (South)	C
671	AOC	Meter House (Gasoline) (3905G)	Petroleum Products	CSI	North of Hobson	I
672	AOC	Substation (126)	PCBs Petroleum Products	CSI	North of Hobson Ave.	I
508	AOC	Incinerator (19)	Petroleum Products Metals	CSI	North of Avenue D	B
622	AOC	Ballast Water Treatment Facility (3926)	Organic Wastes Heavy Metals	CSI Investigate w/ AOC 626	North of Oil Tanks	G
520	AOC	Garbage House (M-1051)	**Unknown**	CSI	North of 2nd Street	C
625	AOC	Sludge Pumphouse (3901B)	Organic Wastes Heavy Metals	CSI	NW of Oil Tanks	G
685	AOC	Smoke Drum (157)	**Unknown**	CSI	Partridge Ave. and Juneau Ave. Area	I
599	AOC	Pier J Pump House	Diesel Fuel	RFI	Pier J	E
598	AOC	Sonar Dome Area	Blast Residue Paint Miscellaneous	RFI	Pier J End	E
550	AOC	Boilerhouse for Marine Corps (1111)	Petroleum Products	CSI	Pier 314 North and East of 1041A	E

Naval Base Charleston Area of Concern Summary May 1994						
AOC Number	**Unit Definition**	**AOC Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
597	AOC	Substation (91)	PCBs Petroleum Products	CSI	Pier 317F (North)	E
594	AOC	Radcon Training & Offices (190)	Unknown	NFI	Pier 317-E South	E
600	AOC	Coaling Pier/Oil Pier (318-L)	Petroleum and Coal Products	NFI	Pier 317-F Area	E
585	AOC	Latrine for Enlisted Men (36)	Organic Wastes Heavy Metals	NFI	Pier 317-D near end. End of 5th Street	E
643	AOC	Substation (125)	PCBs Petroleum Products	CSI	Pier 327 (Base)	G
644	AOC	Substation (1793)	PCBs Petroleum Products	NFI	Pier 327 North	G
641	AOC	Stripper Pumphouse (39-K)	Acetone Methylene Chloride	CSI	Pier 336 (Base)	G
640	AOC	Fuel Oil Pier (322)	Petroleum Products	NFI	Pier 337 South	G
502	AOC	UXO Site Between Piers G and H	Three 5-inch Unexploded Shells at About 40 Feet Below MWL	CSI Investigate w/ EOD Team	Piers G and H (Between)	J
500	AOC	UXO Site Between Piers S and T	2 Mark 47 TORPEX Loaded Depth Bombs	CSI Investigate w/ EOD Team	Piers S and T (Between)	J
519	AOC	Boilerhouse (1081) (not in use)	Petroleum Products	CSI	South of Turnbull Ave.	C
659	AOC	Diesel Storage (14)	Petroleum Products	CSI	South of Hobson Ave.	H
690	AOC	Spoils Area Road	Chemical Wastes Miscellaneous	CSI	South End of Base	I
689	AOC	Southern Tip of Base	Dioxins	RFI	Southern Tip of Base	I

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
512	AOC	Incinerator Building (67)	Petroleum Products Metals Combustion Products	CSI	SW of Storage Area	C
691	AOC	Waterfront	Petroleum Products	RFI	Waterfront	J
692	AOC	Free Oil from Areas Along Cooper River	Petroleum Products	RFI	Waterfront	J
624	AOC	Fuel Oil Booster Pumphouse (98)	Petroleum Products	RFI Investigate w/ AOC 626	West of Hobson Ave.	G
591	—	Unused Contaminated Storage (1760)	—	RESERVED	—	—

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
37	SWMU	Sanitary Sewer System	Miscellaneous	RFI	Basewide	L
52	SWMU	Building NH-1 SAA #67	Miscellaneous	NFI	Building NH-1	D
50	SWMU	Building NH-1 SAA #63	Miscellaneous	NFI	Building NH-1	D
51	SWMU	Building NH-1 SAA #64	Miscellaneous	NFI	Building NH-1	D
60	SWMU	Building 2 <90 Day Accumulation Area #04	Petroleum Products Solvents Paint Miscellaneous	NFI	Building 2	E
56	SWMU	Building 2A SAA #25	Adhesives Miscellaneous	RFI	Building 2A	E
168	SWMU	Building 2A Temp. Metal Storage Area	Zinc		Building 2A	E
67	SWMU	Building 3 Gauge Room	Mercury	CSI	Building 3	E
68	SWMU	Building 5 SAA #21	Adhesives Paints Miscellaneous	NFI	Building 5	E
69	SWMU	Building 5 SAA #24	Paint Adhesives	NFI	Building 5	E
22	SWMU	Old Plating Shop Wastewater Treatment System	Cadmium, Chromium	RFI	Building 5 and 44 Alley Between	E
70	SWMU	Building 5 Dip Tank Area	Copper Chromium Arsenate Miscellaneous	RFI	Building 5	E

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
85	SWMU	Building 9 SAA #03 (Boiler Shop)	Paint Debris Petroleum Products Miscellaneous	NFI	Building 9	E
86	SWMU	Building 9 <90 Day Accumulation Area #36	Paint Petroleum Products Miscellaneous	NFI	Building 9	E
83	SWMU	Building 9	PCBs	RFI	Building 9	E
84	SWMU	Building 9 Lead Storage	Lead	RFI	Building 9	E
29	SWMU	Building X-10	Miscellaneous	NFI	Building X-10	G
34	SWMU	MWR, Southeast of Building X-10	Miscellaneous	NFI	Building X-10 SE	G
35	SWMU	Building X-12	Miscellaneous	NFI	Building X-12	G
89	SWMU	Building 13 SAA #10	Acids/Metals Lab Samples Freon 133	NFI	Building 13	E
92	SWMU	Building 13 SAA #15	Acids/Metals (ICP Waste)	NFI	Building 13	E
30	SWMU	Building 13 SAA #39	Miscellaneous	NFI	Building 13	E
90	SWMU	Building 13	Petroleum Products	NFI	Building 13	E
94	SWMU	Building 13 SAA #45	Acids Acids/Metals Alcohol	NFI	Building 13	E
95	SWMU	Building 13 SAA #46	Used Analytical Reagents	NFI	Building 13	E

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
93	SWMU	Building 13 SAA #43	Miscellaneous	NFI	Building 13	E
91	SWMU	Building 13	Petroleum Products	NFI	Building 13	E
145	SWMU	Building 13A	Mercury		Building 13A (Under)	E
146	SWMU	Building 13A SAA CNSY Permit #85	Lead		Building 13A	E
46	SWMU	NH-21 SAA #T02	Miscellaneous	NFI	Building NH-21	C
88	SWMU	Building 25 SAA #72	Miscellaneous	NFI	Building 25	E
76	SWMU	Building 32 SAA #73	Miscellaneous	NFI	Building 32	E
58	SWMU	Building 35 SAA #49	Acids/Metals Alcohol	NFI	Building 35	E
59	SWMU	Building 35 SAA #56	Miscellaneous	NFI	Building 35	E
57	SWMU	Building 35 SAA #02	Petroleum Miscellaneous	NFI	Building 35	E
73	SWMU	Building 43 SAA #01	Petroleum Products Used Coolants Solvents	NFI	Building 43	E
71	SWMU	Building 44 SAA #70	Petroleum Products Metal Shavings	NFI	Building 44	E
72	SWMU	Building 44 <90 Day Accumulation Area	Plating Chemical Wastes	NFI	Building 44	E
25	SWMU	Building 44, Old Plating Operation	Miscellaneous, Cyanide, Metals	RFI	Building 44	E
45	SWMU	Building NH-51 SAA #54	Photograph Fixer/Developer	NFI	Building NH-51	C

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
136	SWMU	Building NS-53 SAA #19	VOCs Metals Petroleum Products Miscellaneous	CSI	Building 53	H
16	SWMU	Paint Storage Bunker	Paint	RFI	Building X-55 West	I
64	SWMU	Building 56 SAA #07	Paint Miscellaneous	NFI	Building 56	E
74	SWMU	Building 57 SAA #34	Tetrachloroethylene Miscellaneous	NFI	Building 57	E
169	SWMU	Building 57 Touch up Painting Operations	Paint		Building 57	E
55	SWMU	Building 59 SAA #05 (former Boiler Shop)	Paint Glue Miscellaneous	NFI	Building 59	E
17	SWMU	Oil Spill Area	Oil	RFI	Building 61 North Side	H
133	SWMU	Building 61 SAA #09	Borate Cupric Sulfate Petroleum Products	NFI	Building 61	H
134	SWMU	Building 61 SAA #68	Miscellaneous	NFI	Building 61	H
132	SWMU	Building 61 SAA #06	Mercuric Nitrate	NFI	Building 61	H
135	SWMU	Building 61 SAA #71	Miscellaneous	NFI	Building 61	H
26	SWMU	Waste Storage Area, Building 64-40, Pier C	Miscellaneous	NFI	Building 64 -40 Pier C	E
47	SWMU	Burning Dump	**Unknown**	CSI	Building 64, 66, 67 NSC Area	C

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
131	SWMU	Building NS-67 SAA #66	Miscellaneous	NFI	Building NS-67	H
36	SWMU	Building 68, Battery Shop	Sulfuric Acid	RFI	Building 68	F
102	SWMU	Building 79 Floor	Mercury	CSI	Building 79	E
151	SWMU	Building 79A	Mercuric Nirate, Silver Nirate, Chromium, Lead, Flammable Waste, Chromium/Lead Paint		Building 79A	E
152	SWMU	Building 79A SAA CNSY Permit #92	Flammable Waste, Lead, Brass, Bronze		Building 79A	E
172	SWMU	Building 80 Steam Cleaning Operations	Grease, Solvents		Building 80 (Outside)	E
87	SWMU	Building 80 <90 Day Accumulation Area #11	Paint Petroleum Products Mercury Chelating Agents Miscellaneous	NFI	Building 80	E
174	SWMU	Air Compressor Oil Blowdown	Petroleum Products		Building 97	F
155	SWMU	Building 101	Chromium, Lead, Flammable Waste, Chromium/Lead Paint		Building 101	E
8	SWMU	Oil Sludge Pit	Oil Sludges	RFI	Building 161 SW of Parking Area	G
148	SWMU	Shop 71 Storage Area SAA CNSY Permit #81	Paint, Thinner		Building 174	E

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
82	SWMU	Building 177 SAA #69	Solvents Xylene Petroleum Products Adhesives Preservatives Acetone, MEK Toluene	NFI	Building 177	E
108	SWMU	Building 187 SAA #27	Miscellaneous	NFI	Building 187	F
11	SWMU	Caustic Pond	Calcium Hydroxide	RFI	Building 190 SE	G
80	SWMU	Building 194 SAA	Miscellaneous	CSI	Building 194	E
32	SWMU	Waste Paint Storage Area Building 195	Paint	NFI	Building 195	E
49	SWMU	Battery Charging Station(219)	Lead Sulfuric Acid	CSI	Building 198 South	C
125	SWMU	Building 202 SAA #16	Mercuric Nitrate Waste	NFI	Building 202	H
126	SWMU	Building 202 SAA #17	Mercuric Nitrate Waste	NFI	Building 202	H
129	SWMU	Building 202 SAA #41	Spent OBA Canisters	NFI	Building 202	H
127	SWMU	Building 202 SAA #18	Mercuric Nitrate Waste	NFI	Building 202	H
128	SWMU	Building 202 SAA #40	Mercuric Nitrate Waste	NFI	Building 202	H
130	SWMU	Building 202 SAA #42	Petroleum Products	NFI	Building 202	H
53	SWMU	Building 212 SAA #29	Paint Miscellaneous	RFI Investigate w/AOC 526	Building 212	E

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
100	SWMU	Building 218 SAA #26	Petroleum Products Paint Sandblast Grit Miscellaneous	RFI	Building 218	E
65	SWMU	Building 221 Lead Storage	Lead	RFI	Building 221	E
144	SWMU	Building 222 SAA CNSY Permit #88	Flammable Waste, Lead, Cadmium, Brass, Bronze		Building 222	E
143	SWMU	Building 222	Mercuric Nirate, Silver Nitrate, Chromium, Lead, Flammable Waste, Chromium/Lead Paint		Building 222	E
62	SWMU	Building 226 SAA #08	Plating Solution Metal Hydroxide Misc. Plating Supplies/Debris	NFI	Building 226	E
23	SWMU	New Plating Shop Wastewater Treatment System	Miscellaneous	RFI	Building 226	E
63	SWMU	Battery Charging Station (73)	Lead Acids	CSI	Building 226 Area	E
61	SWMU	Building 228 <90 Day Accumulation Area #22	Adhesives Miscellaneous	NFI	Building 228	E
48	SWMU	Building 234 SAA #55	Photo Chemicals Ammonia EDTA Containers	NFI	Building 234	C
97	SWMU	Building 236 <90 Day Accumulation Area #20	Petroleum Products Solvents Miscellaneous	RFI	Building 236	E

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
96	SWMU	Building 236 <90 Day Accumulation Area #14	Petroleum Products Paint Miscellaneous	NFI	Building 236	E
111	SWMU	Building 241 SAA #37	Paint Miscellaneous	NFI	Building 241	F
113	SWMU	Building 241 SAA #47	Paint Petroleum Products Miscellaneous	NFI	Building 241	F
112	SWMU	Building 241 SAA #38	Paint Miscellaneous	NFI	Building 241	F
114	SWMU	Building 241 SAA #48	Petroleum Products	NFI	Building 241	F
115	SWMU	Building 242 SAA #44	Petroleum Products	NFI	Building 242	F
10	SWMU	Hazardous Waste Storage Facility, Building 246	Miscellaneous	RU	Building 246	G
117	SWMU	Building 249 SAA #52	Paint	CSI	Building 249	G
3	SWMU	Pesticide Mixing Area	Pesticides	RFI	Building 249	G
79	SWMU	Building 250 SAA #53	Miscellaneous	CSI	Building 250	E
7	SWMU	PCB Transformer Storage Yard	PCBs	RFI	Building 380 SW of Old Corral	G
6	SWMU	Public Works Storage Yard (Old Corral)	Hazardous Waste, Lead	RFI	Building 380 SW of Old Corral	G
4	SWMU	Pesticide Storage Building	Pesticides	RFI	Building 381	F

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
159	SWMU	Building 610 SAA CNSY Permit #90	Aerosol Cans		Building 610	H
123	SWMU	Building 636 SAA #59	Paint Grease Miscellaneous	NFI	Building 636	H
122	SWMU	Building 636 SAA #58	Paint Grease Miscellaneous	NFI	Building 636	H
176	SWMU	Transformer Oil Leak	Petroleum Products		Building 657 (Near)	H
137	SWMU	Building 675 SAA #35	Miscellaneous	NFI	Building 657	H
142	SWMU	Building 681 SAA #50	Paint Miscellaneous	NFI	Building 681	I
121	SWMU	Building 801 SAA #76	VOCs Metals Petroleum Products Miscellaneous	RFI Investigate w/ SWMU 9	Building 801	H
20	SWMU	Waste Disposal Area	Miscellaneous	RFI	Building 903 NE	H
101	SWMU	Building 1173 SAA #62	Miscellaneous	CSI	Building 1173	E
116	SWMU	Building 1175 SAA #65	Petroleum Products	NFI	Building 1175	F
81	SWMU	Building 1245 <90 Day Accumulation Area #23	Paint Trichloroethane	CSI	Building 1245	E
54	SWMU	Abrasive Blast Area at SWMU #21	Blast Residue	RFI Investigate w/SWMU 21	Building 1275 Area	E

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
175	SWMU	Crane Painting Area	Paint		Building 1277 (Near)	F
18	SWMU	PCB Spill Area	PCBs	RFI	Building 1278	E
157	SWMU	Building 1278 <90 Day Area CNSY Permit #83	Contaminated Soils and Ground Water		Building 1278	E
173	SWMU	Building 1297 Storage Area	Lead		Building 1297	E
13	SWMU	Current Fire Fighter Training Area	Petroleum	RFI	Building 1303 Area	H
110	SWMU	Building 1346 SAA #57	Paint Grease Miscellaneous	NFI	Building 1346	F
124	SWMU	Building 1508 SAA #60	Paint Petroleum Products Miscellaneous	RFI Investigate w/ AOC 653	Building 1508	H
105	SWMU	Building 1518 SAA #33	Petroleum Products Paint Miscellaneous	NFI	Building 1518	E
41	SWMU	Battery Charging Facility (1624)	Lead Sulfuric Acid	NFI	Building 1602C North	A
39	SWMU	POL Drum Storage	Petroleum Products	RFI	Building 1604 North	A
38	SWMU	Miscellaneous Storage	Petroleum Products Miscellaneous	CSI Investigate w/ SWMU 39	Building 1605 North	A
43	SWMU	Publications and Printing Plant Building 1628	Chromium Lead	CSI	Building 1628	A

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
40	SWMU	Building 1640 DRMO	Hazardous Wastes	RU	Building 1640	A
138	SWMU	Building 1776 SAA #51	VOCs Waste Oil Petroleum Products Antifreeze	CSI	Building 1776	H
5	SWMU	Battery Electrolyte Treatment Area	Acids	RFI	Building 1797 Area	E
42	SWMU	Asphalt Plant/Tanks Boiler Plant	Asphalt Products Solvents Degreasers	CSI	Building 1803 NW	A
15	SWMU	Incinerator	Miscellaneous, Paper	RFI	Building 1843 South	H
14	SWMU	Chemical Disposal Area	Miscellaneous	RFI	Building 1897 South	H
161	SWMU	Vehicle Maintenance Shop (Marine Reserve Center)	Petroleum Products, Solvents, Degreasers		Building 2505 Fenced Area	K
162	SWMU	Sludge Drying Field (MOMAG 11)	Heavy Metals		Building 2509 Near	K
163	SWMU	Concrete Pit Area 10'X10'X2' (MOMAG 11)	Paint, Thinner		Building 2513 (100 North)	K
164	SWMU	Blasting Operation (MOMAG 11)	Heavy Metals		Building 2556	K
165	SWMU	Paint Operation (MOMAG 11)	Paint		Building 2556	K
107	SWMU	Chapel CBU-412 SAA #T03	Miscellaneous	NFI	Chapel CBU-412	F
1	SWMU	DRMO Storage Area	Hazardous Waste, Lead	RFI	DRMO	A

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
2	SWMU	Lead Contaminated Area	Lead	RFI	DRMO	A
75	SWMU	Dry Dock #1 SAA #78	Miscellaneous	NFI	Dry Dock #1	E
170	SWMU	Dry Dock #1 Area PCB Removal Operations	PCBs		Dry Dock #1 (Head)	E
77	SWMU	Dry Dock #2 SAA #31	Miscellaneous	NFI	Dry Dock #2	E
171	SWMU	Dry Dock #2 Area PCB Removal Operations	PCBs		Dry Dock #2 (Head)	E
33	SWMU	Waste Paint Storage Area West End, Dry Dock #2	Paint	NFI	Dry Dock #2	E
78	SWMU	Dry Dock #2 SAA #61	Paint Miscellaneous	NFI	Dry Dock #2	E
106	SWMU	Blast Area Dry Dock #3	Blast Residue	RFI	Dry Dock #3	E
156	SWMU	Dry Dock #4 Pierside SAA CNSY Permit #86	Lead, PPE		Dry Dock #4 Area	E
31	SWMU	Waste Paint Storage Area Dry Dock #5	Paint	NFI	Dry Dock #5	E
149	SWMU	Metal Trades SAA @Dry Dock #5 CNSY Permit #T06	Paint Waste, Thinner		Dry Dock #5 Area	E
21	SWMU	Old Paint Storage Center (Waste Paint Storage Pad)	Paint	RFI	Facility 1275 Area	E
24	SWMU	Waste Oil Reclamation Facility	Waste Oil	RFI	Fuel Farm Area	G
167	SWMU	MOMAG 11 <180 Day Storage Area CNSY Permit #94	Paint, Thinner, Heavy Metals, Batteries, Petroleum Products		MOMAG 11	K

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
166	SWMU	Sewer System (Naval Annex)	Heavy Metals, Solvents		Naval Annex	K
9	SWMU	Closed Landfill	Miscellaneous	RFI	Open Area Between Bainbridge and West Road	H
28	SWMU	Waste Storage Area West End, Pier C	Paint	NFI	Pier C West End	E
66	SWMU	Pier C SAA #30	Miscellaneous	NFI	Pier C	E
27	SWMU	Waste Storage Area East End, Pier C	Paint	NFI	Pier C East End	E
147	SWMU	Pier C SAA CNSY Permit #79	Waste Oil, Aerosol Cans		Pier C	E
99	SWMU	Pier G SAA #74	Miscellaneous	NFI	Pier G	E
98	SWMU	Pier G SAA #28	Paint Miscellaneous	NFI	Pier G	E
103	SWMU	Pier H SAA #77	Miscellaneous	NFI	Pier H	E
154	SWMU	Pier H SAA CNSY Permit #80	Waste Oil, Aerosol Cans		Pier H	E
153	SWMU	Pier H SAA CNSY Permit #91	Paint Waste, Thinner		Pier H	E
158	SWMU	Pier M Qwaywal SAA CNSY Permit #82	Paint Waste		Pier M Quaywal	G
120	SWMU	Pier M Laydown	Paint Lead	CSI	Pier M	G

Naval Base Charleston Solid Waste Management Unit Summary May 1994						
SWMU Number	**Unit Definition**	**SWMU Name**	**Materials Released, Stored, or Disposed**	**Investigative Approach**	**Location**	**Study Zone**
139	SWMU	Pier P SAA	Miscellaneous	NFI	Pier P	I
140	SWMU	Pier P SAA	Miscellaneous	NFI	Pier P	I
141	SWMU	Pier Q SAA #T01	Paint Miscellaneous	NFI	Pier Q	I
160	SWMU	Port Services SAA CNSY Permit #95	Waste Oil		Pier S Quaywal	I
150	SWMU	Brazwell Shipyard SAA @ Pier Z CNSY Permit #93	Paint Waste, Thinner		Pier Z	E
118	SWMU	Pier Z SAA	Miscellaneous	NFI	Pier Z	G
119	SWMU	Garbage Handling (1271)	**Unknown**	NFI	Pier 336 End	G
177	SWMU	RTC-4 Oil Spill	Petroleum Products		RTC-4	I
44	SWMU	Coal Storage, South Side of Noisette Creek	Coal, Coal Byproducts	RFI	South Side of Noisette Creek	C
12	SWMU	Old Fire Fighter Training Area	Petroleum	RFI	Southern Tip of Base	I
109	SWMU	Abrasive Blast Media Storage Hoppers	Blast Media	CSI	Structures 1364, 1365, 1393	F
19	SWMU	Solid Waste Transfer Station	Miscellaneous	RFI	West of Least Tern Lane	H
104	—	—	—	—	—	—

APPENDIX B
ZONE MAPS

APPENDIX C
RESUMES OF KEY PERSONNEL

APPENDIX D

BRAC PROJECT CLEANUP TEAM MEMBERS

TABLE 1-1 CURRENT BCT/PROJECT TEAM MEMBERS

BCT MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Pat Franklin	BRAC Environmental Coordinator (BEC)	(803) 743-0691 (SOUTHDIV) (803) 743-9985 (BRAC Office) (803) 743-9947 (fax)	SOUTHDIV c/181 NAVBASECHAS c/N4BEC	DOD BCT Member
Bobby Dearhart	BRAC Environmental Coordinator (BEC)	(803) 743-2443 (Shipyard) (803) 743-9985 (BRAC Office) (803) 852-1931 (pager) (803) 743-9947 (fax)	CNSY c/2308 NAVBASECHAS c/N4BEC	DOD BCT Member
Doyle Brittain	Senior Remedial Project Manager (RPM)	Atlanta: (404) 347-3016 (404) 347-5205 (fax) Local: (803) 743-9985 (803) 743-9947 (fax)	EPA Region IV Waste Management Division	Federal BCT Member
Ann Ragan	Federal Facility Liaison	Columbia: (803) 734-4721 (803) 734-5199 (fax) Local: (803) 743-8127	SCDHEC Environmental Quality Control Division	State BCT Member

CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Steve Beverly	Attorney Advisor	(803) 743-0708	SOUTHDIV c/09CB	Legal Counsel
Pat Cline	Natural Resources	(803) 743-0588	SOUTHDIV c/243	Natural Resources
Thuane Fielding	Environmental Engineer	(803) 743-0513	SOUTHDIV c/1876 Environmental Division	RPM
Daryle Fontenot	Environmental Engineer	(803) 743-0607 (803) 743-0465 (fax)	SOUTHDIV c/1841 Petroleum Division	UST
Tony Hunt	Environmental Engineer	(803) 743-0525	SOUTHDIV c/1877 Environmental Division	RPM
Ron Johnson	Architect	(803) 743-0990	SOUTHDIV c/203RJ Environmental Planning Division	Historical and Cultural Resource Review

TABLE 1-1 CURRENT BCT/PROJECT TEAM MEMBERS

CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Pano Kordonis	Environmental Engineer	(803) 743-0565 (803) 743-0465 (fax)	NAVBASECHAS c/N34 SOUTHDIV c/1825 Hazardous Waste Division	Hazardous Wastes
Sue Lawley	Public Affairs Officer (PAO)	(803) 743-0771	SOUTHDIV c/OPP Public Affairs Office	Public media assistance
Linda Martin	Environmental Engineer	(803) 743-0574 (803) 743-0465 (fax)	SOUTHDIV c/1802 Operations Division	Contracts
Will Sloger	Planner	(803) 743-0797	SOUTHDIV c/203 Environmental Planning Division	EIS Preparation
Shirley Washington	Realty Specialist	(803) 743-0489	SOUTHDIV c/241 Real Estate Division	Real Estate
LT. Donna Murphy	Public Affairs Officer (PAO)	(803) 743-3940 (803) 743-2545 (fax)	NAVBASECHAS c/06 Base Closure Office	Public media and news releases, community feedback
CAPT J. Augustin	Base Closure Officer (BCO)	(803) 743-9948 (803) 743-9947 (fax)	NAVBASECHAS c/N4 Base Closure Office	RAB Co-Chairman
Rick Davis	Engineer	(803) 743-3604 (803) 743-9947 (fax)	NAVBASECHAS c/N41 Base Closure Office Facilities/Real Estate	Environmental Closure Planning Subcommittee
David Epps	Computerized Project Manager	(803) 743-8127	NAVBASECHAS c/N42 Base Closure Office	Base Closure Office Computer Services
CDR Jim Moore	Base Transition Coordinator (BTC)	(803) 743-9985 (803) 743-9947 (fax)	NAVBASECHAS c/N4BTC Base Closure Office	Community Liaison Federal Agency Liaison
CMDR Crowley	Regional Environmental Coordinator (REC)	(803) 743-2670 (803) 743-2545 (fax)	NAVBASECHAS c/N3 Operations Department	COMNAVBASE
LT Gil Wolfe	Environmental Control Officer (NAVSTA)	(803) 743-5557 (803) 743-2554 (fax)	NAVSTACHAS	Environmental Closure Planning Subcommittee

TABLE 1-1 CURRENT BCT/PROJECT TEAM MEMBERS

CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Jim Beltz	Public Affairs Officer (PAO)	(803) 743-6233	CNSY c/1160 Congressional and Public Affairs Office	CNSY Media and News Release Coordination
CDR S.V. Bisceglia	Operations Closure Officer	(803) 743-4216	CNSY c/300C CNSY Operations Closure Office	CNSY Closure Operations Coordination
Bill Brasel	Environmental Division Head	(803) 743-5519 (803) 743-6055 (803) 743-1475 (fax)	CNSY c/106.2 Environmental Division	Environmental Compliance Program at CNSY Environmental Closure Planning Subcommittee
Mike Simmons	Radiological Controls Engineering	(803) 743-3130	CNSY c/105.2	CNSY Nuclear Closure and Radiological Control POC
Ned Johnson	Deputy Director Radiological Control	(803) 743-6632	CNSY c/105.1 Radiological Control Office	CNSY Nuclear Closure and Radiological Control POC
Ralph Laney	Occupational Safety, Health and Environmental Office Head	(803) 743-5519 (803) 743-1475 (fax)	CNSY 106 Environmental Remediation Division	Environmental Compliance
Mitch Mascoe	Environmental Engineer	(803) 743-5519 (803) 743-1475 (fax)	CNSY c/106.21 Environmental Controls Division	HW Permit
Michele McCoy	Legal Officer	(803) 743-3178	CNSY c/1130 CNSY Legal Office	CNSY Legal Council
Jim McNeil	Director Radiological Control	(803) 743-3552	CNSY c/105 Radiological Control Office	CNSY Nuclear Closure and Radiological Control POC
Gary Crawford	Environmental Engineer	(803) 743-3452 (803) 743-9581	CNSY c/106.25 Environmental Division	Hazardous Waste
Bill Strickland	Engineering Division Head	(803) 743-4981	CNSY c/440 Public Works Office	Utilities/Maps
Marvin Sturdivant	Environmental Protection Specialist	(803) 743-5519 (803) 743-1475 (fax)	CNSY c/106.2 Environmental Controls Division	SWMUs

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CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
David Walton	Environmental Engineer	(803) 734-4814 (803) 734-5199 (fax)	Division of Hazardous and Infectious Waste Management	Naval Base Charleston Project Manager
Butch Bonner	DRMO, Chief	(803) 743-3008 (803) 743-8040 (fax)	DRMO	Environmental Closure Planning Subcommittee
Bob Veronee	Safety Director	(803) 743-4086 (803) 743-6371 (fax)	FISC c/05	Environmental Closure Planning Subcommittee
John Barnes	Industrial Hygienist	(803) 743-6100 (803) 743-0246 (fax)	NAVHOSPCHAS	Environmental Closure Planning Subcommittee
Barry Lewis	Environmental Engineer	(803) 764-4010 (803) 764-4177 (fax)	NAVWPNSTACHAS c/0442	Environmental Closure Planning Subcommittee
Dr. Elmer Akin	Toxicologist	(404) 347-1586	U.S. EPA Region IV	Risk Assessment
Marion Hopkins	NEPA Specialist	(404) 347-3776	USEPA Region IV	NEPA
Diane Jackson	Chemist	(404) 639-6070		Health Assessment
Pete Raack	Attorney	(404) 347-2641 ext. 2243	USEPA Region IV	Legal Affairs
Carl Terry	Public Affairs Specialist	(404) 347-3004	USEPA Region IV	Public Affairs
Joe Bowers	Hydrogeologist	Columbia: (803) 734-5484 (803) 734-5199 (fax)	SCDHEC Division of Hydrogeology	Hydrogeology
Wayne Fanning	Assistant Director of Trident District EQC	(803) 740-1590 (803) 740-1595 (fax)	SCDHEC Chasn Division Trident EQC	Contractors Technical Representative
Tim Metten	Hydrogeologist	(803) 734-5328	SCDHEC Division of Groundwater Protection	UST Specialist
Rick Richter	Environmental Quality Manager	(803) 740-1590 (803) 740-1595 (fax)	SCDHEC Chasn Division Trident EQC	Hazardous Waste Consultant

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CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Bruce Campbell	Water Resources Director	(803) 883-9104	US Geological Survey	
Diane Duncan		(803) 727-4707 (803) 727-4218 (fax)	US Fish and Wildlife Department of Interior	Natural Resource Trustee
Waynon Johnson	Coastal Resources Coordinator	(404) 347-5231	National Oceanic and Atmospheric Administration (NOAA)	Natural Resource Trustee
Jim Lee	Regional Environmental Officer		US Department of Interior	Natural Resource Trustee
Rob Mikell		(803) 744-5847 (803) 744-5838 (fax)	South Carolina Coastal Council (SCCC)	Natural Resource Trustee
Dr. Bob Van Dolah	Assistant Director	(803) 762-5048	SC Wildlife and Marine Resources	Sediment Samples
Jane Settle	Environmental Evaluations	(803) 762-5068 (803) 762-5007 (fax)	SC Wildlife and Marine Resources	Natural Resource Trustee
Madeline McGee	Co-Chairman	(803) 724-0670 (803) 724-0674 (fax)	BEST	BEST Policy Committee
Dave Backus	Clean Contractor Project Manager	Memphis: (901) 372-7962 (901) 372-6023 (fax) Local: (803) 744-4449	EnSafe/Allen & Hoshall	EBS and BCP Preparations
Van Robinson	Businessman	(803) 566-1629	RAB	RAB Co-chairman